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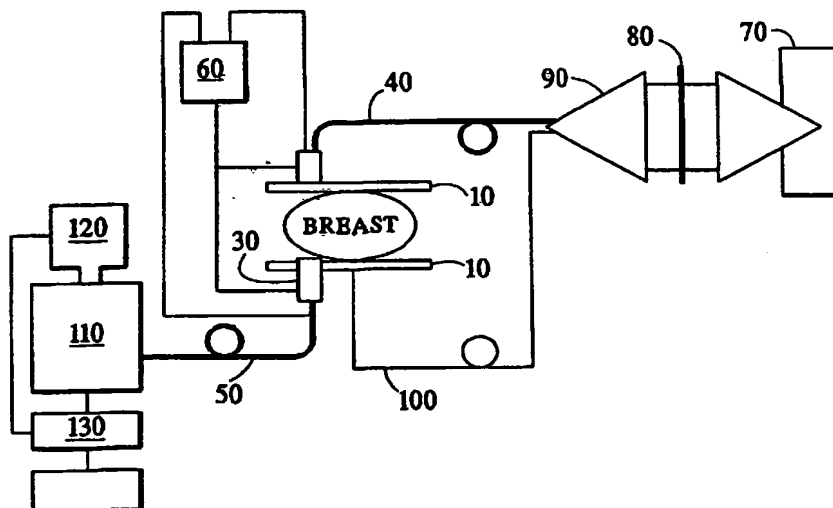
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(54) Title: OPTICAL IMAGING AND OXIMETRY OF TISSUE



(57) Abstract: Systems and methods are disclosed for detecting at least one region of a sample having an absorption level different from a background level of absorption in the sample by obtaining thicknesses of the sample and intensities of light transmitted through the sample at a plurality of locations. The system includes glass plates (10) for compressing the tissue, distance sensors (20, 30), illuminations fibers (40) connected to a light source (70), and collection fibers (50) connected to spectrophotometer (110). Spatial second derivatives are calculated from products of the thicknesses of the sample and the intensities of the transmitted light for the locations. The data points are compared to detect the region of the sample having an absorption level different from the background level of absorption within the sample. The new systems and method can be used to optically image, detect, and characterize tissue, lesions, such as cancer.



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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/07766

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A 61B 5/00  
US CL : 600/322,473,476

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 600/322,473,476,323,309,310; 356/39,41

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
EPO,JPO,Derwent,Google,Medline: search terms: light, imaging, second spatial derivative, tissue

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	Hanson, Kenneth M. Optical tomography: seeing inside the body. A presentation available under <a href="http://home.lanl.gov/kmh">http://home.lanl.gov/kmh</a> , slides 13-17	1-11,14-24,42-48
A	US 5,839,141 A (Makram-Ebeid et al.)03 November 1998 (03.11.1998), column 4, line 30 to column column 6, line 59	1-11,14-24,42-48
A	US 5,285,783 A (Secker) 15 February 1994 (15.02.1994), column 3, lines 11-49	12-13,25-41
A	US 6,226,540 B1 (Bernreuter)01 May 2001 (01.05.2001), column 2, line 15 to column 3, line 5	12-13,25-41

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

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"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

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